



**NORTHERN LIGHT
ACETYLENE
LIGHTING SYSTEM**

THE KNIGHT'S SUN

These Facts are of Tremendous Importance to You

—if you want to enjoy a modern, efficient, convenient and economical lighting system in your home

Acetylene is the best artificial light and cooking fuel yet discovered.

The perfected "Northern Light" System puts acetylene on tap in any home with the utmost safety and convenience—

—with every possible chance of trouble absolutely done away with—because—

—the "Northern Light" Generator can be refilled with carbide and water **without admitting air**—and without air, pure acetylene gas is as harmless as a dove;

—this generator is placed in the ground, away from the buildings, which is the correct place for any gas making machine.

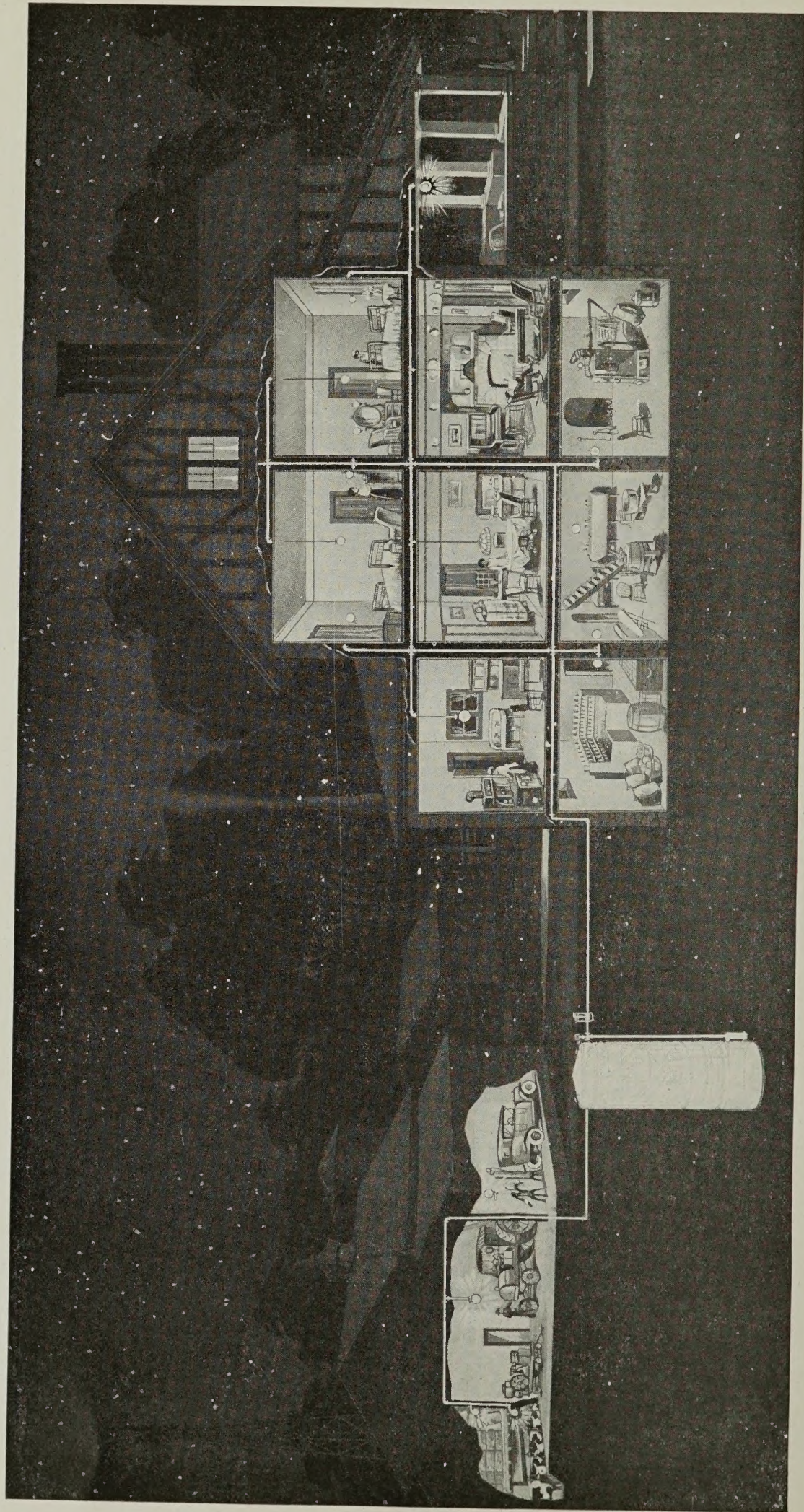
—it is made of material that will withstand the corrosive influence and acids of the earth;

—it will work in the coldest climate without danger of freezing.

On the following pages these facts and many others are substantiated. Read this book from cover to cover. You will be well repaid by what you learn.

The Cleifton Company
Owatonna, Minnesota

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Night scene showing how it is possible to place lights conveniently both in the buildings and outside. One "Northern Light" Generator supplies all lights;—note its location in the ground.

IT was an important date in the history of American Industrial Progress when the final tests were completed on the "Northern Light" Acetylene Generator—the first and only acetylene generator ever manufactured that can be refilled with carbide and water without admitting air.

On that day a new era in the acetylene business was ushered in—a new world was opened up for thousands of country homes whose owners up to this time had denied themselves the benefits and advantages of an acetylene lighting system because of the one last possible objection.

Even before this refilling device had been invented and perfected by the Cleifton Company engineers, the "Northern Light" Pit Generator Acetylene Lighting System was conceded by many recognized authorities to be "the best of its kind on the market". (The secretary of the Security Mutual Fire Insurance Company and other men of like repute, as well as many owners of our system, said so in so many words).

Even without this improvement, it had been made so safe that not one accident has resulted from the operation of the thousands that are installed in country homes all over the Union. In fact, some insurance companies officials went so far as to declare that "**the 'Northern Light' Acetylene System**, as installed by the Cleifton Company factory experts **is safer than electric light** as installed by a good many plumbers and engineers."

Now—with the refilling of the Generator made even safer, easier and more convenient for you than before—the last possible objection to your enjoying the benefits and advantages of our acetylene lighting system has been removed—leaving not a shred of doubt as to the absolute safety of the "Northern Light" Acetylene Lighting System.

Consider now, what this means to you, consider the advantages of acetylene over other systems of lighting.

Quality of Acetylene Light

Professor Pond of the University of Pennsylvania, one of the world's foremost authorities on this subject, says: "In quality, acetylene is the nearest approach to sunlight that we know. This quality adapts it to photographic uses, to matching colors, and doing other work at night which is impossible with other illumination. The flame of acetylene is absolutely white and of intense brilliancy."

"Acetylene most closely resembles sunlight in composition or color, and is perfectly steady," say Leeds & Butterfield, in their book "Acetylene, Its Generation and Use," the leading text book of all those engaged in the manufacture or sale of acetylene appliances.

These facts are significant, because Nature fitted your eyes for sun-

As to safety, there is no other system to be used in the country that is ahead of this system.

SECURITY MUTUAL FIRE INSURANCE CO.

light. While acetylene light is powerful, it is not only the most pleasing but the easiest on the eyes of any artificial light.

Its Cheering Influence

Acetylene light is beautiful—and it beautifies everything it touches. It shows up colors in their true values—it enhances color schemes in rugs, carpets, walls and dress patterns. It is a very proud housewife who can reach up, when company comes, and turn on a couple of white acetylene lights. For nothing excites the wonder and admiration of a visitor like a soft, brilliant light that illuminates the room with a warm, cheerful, pleasing glow.

Everyone agrees that the "Evening Hour" is the one period of the day that should be most attractive—it's the time when all the members of the family meet for recreation, reading and talk. What better thing could you do for your young folks than to throw out greasy, feeble lamps and put brilliant acetylene lights in their place?

A room full of white light has a wonderful attraction for children. It helps to keep them cheerful and contented. Scientists say that weak, yellow lights are depressing and make folks grouchy and discontented.

On the other hand, a good volume of beautiful light helps to make them lively and happy. It is commonly said that one reason why so many young people leave the farm is because they are attracted by the bright lights of the city life.

Acetylene Light Saves Eyes and Health



Eminent eye specialists and physicians know that the majority of the nervous diseases come from eye strain, and this because the artificial yellow light produced by kerosene, gas and electricity, is utterly unlike the natural sunlight.

The unflickering white acetylene light made possible by the "Northern Light" Pit Generator, enables you and your family to enjoy the evening reading and study hours without straining your eyes or taxing your nerves.

Besides, from a health standpoint, acetylene light is by far the best for it

We have a nice light wherever and whenever it is needed.

GUY D. DOTY, Lake City, Iowa.

burns up less of the life-giving oxygen in the air than gasoline and oil lamps, which eat up the air and cause you to breathe an acid which impairs your health. Read what the authorities we have already quoted say about this: "Acetylene exhausts, vitiates and heats the air of a room to a less degree than do either coal gas, oil, or candles, hence in confined or crowded rooms, the air will suffer less and accordingly be better for breathing, if acetylene is chosen for the illuminant."—Leeds & Butterfield.

"Light for light, acetylene illumination causes much less elevation of temperature in the atmosphere of rooms than do other forms of lighting by gas or oil. Acetylene impoverishes the air only one-fourth as much and pollutes it one-fourth as much as illuminating gas."—Professor Pond.



The Convenience of Acetylene With a "Northern Light" System is Unsurpassed

All "Northern Light" Systems are installed with friction or automatic electric ignitors. No need to have matches which, through careless handling, are a constant menace. You simply press a button or pull a chain to light any burner or fixture—and you can have fixtures, chandeliers or domes as fine and beautiful as in any city home.

You can press a button and light the basement, the hallway, attic or upstairs. You can go upstairs or down without having to grope in the dark and risk breaking bones by stumbling down stairs. The children can go up to bed without carrying lanterns, lamps, matches or candles, which are always a danger in their hands and even in your own.

You can stand in the kitchen, on the porch, or in any part of the house, and by pressing a button, light up the yard, barn, silo, feed stables or any other farm building—light them up almost as bright as day and without the least fire hazard. "Northern Light" barn, porch, and outdoor lights are enclosed in heavy glass globes with a screen below and canopy on top, thus making them absolutely fire and wind proof. They

We believe the "Northern Light" System is the best—and more convenient than electric, as you can use the same gas for cooking purposes.

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are so completely protected that they can be covered with hay without danger of it catching fire. Even a stiff wind cannot blow them out.

Think how much easier and more comfortable it will be to do after-dark chores with such a convenient and bright light—how much easier it will be to unhitch horses on cold, dark nights, or to look after sick animals, or to do any of the many other evening chores that, coming at the end of a long day always seem hardest. Contrast this way with stumbling along under the dingy light of a smoky oil lantern, which is always a fire menace.

Acetylene the Best Cooking Fuel

You can have the convenience of a gas stove like city folks. Think of the convenience and comfort of a hot fire instantly, without the drudgery of carrying in the fuel, and carrying out the ashes, to say nothing of the dirty work of starting the wood or coal fire, causing soiled hands and clothes. Think of the pleasure, when company comes, of preparing a meal with neatness and dispatch. With acetylene gas the women folks need not swelter during the hot weather in an over-heated kitchen as they do with the older and cruder methods of our forefathers, but they can cook, iron or wash in comfort with acetylene gas. Acetylene thus overcomes one of the most trying duties of the farm wife. Further, there are no sooty pots or pans to clean, inasmuch as acetylene gas does not smoke.

The housewife can have the coffee all made and the eggs done to a turn in five minutes after jumping out of bed—with no waiting for the stove to heat and no kindling, wood, coal or ashes to fight with.

With the "Northern Light" system you can have one of our gas irons, which not only saves all of the work and lost time in walking back and forth between the stove and the ironing board, the discomfort of a hot stove in the summer time, but enables you to keep the iron at an even temperature all the time. Many women claim that it saves them fully half the time of ironing.

You can hardly conceive of a convenience that would contribute more to the health and happiness of the women folks, and you must re-

I do not think the lights expensive to maintain, just as cheap as kerosene.

F. E. McINTIRE, Winnebago, Minn.

member, too, that home-made acetylene gives you this perfect cooking and ironing fuel, in addition to good lights. Other systems give you lights alone.

The saving of time, trouble, dirt and annoyance in cleaning, filling and trimming dirty, ill-smelling kerosene lamps, is alone worth the price of the system. This applies equally to gasoline systems that require daily attention. In the average rural home from one-half to an hour per day is required to keep the lamps cleaned, properly trimmed and filled. At the conservative estimate of one-half hour per day or three hours per week, the average housewife spends 156 hours per year in this disagreeable work—more than half a month of ten hour days; more time than the average farmer spends each year in plowing. Surely the housewife's time is as valuable as that of the man. Such a saving of time and work, in addition to the pleasure of entertaining in a comfortable, brilliantly lighted home, surely appeals to the ladies.

With all these comforts, the "Northern Light" Pit Generator System requires very little time and attention,—very much less than any individual electric plant or other lighting system, as will be shown farther on in this booklet. About 3 or 4 times a year you take about an hour to refill the carbide holder and pump out the sludge. These are both very simple and easy tasks with the "Northern Light" Pit Generator System, because of two of our many perfected features, the full details of which we explain further on.

Acetylene Light is the CHEAPEST as Well as Best

Acetylene gas, as made by our "Northern Light" Pit Generator, costs no more than any other artificial illuminant, and less than most of them, including kerosene, and eliminates all of the attendant dangers. The cost of our light averages a half cent per hour for a 25-candle power burner, which is less than the cost of the same candle power produced from kerosene at thirteen cents per gallon.

Think of it—the best artificial light known—the most convenient light, the safest light—all for the same or less money than inferior lights. Here are authoritative facts and figures that will enable you to prove this yourself.



Our "Northern Light" lighting system is entirely satisfactory. I would seriously considering leaving the farm, if we must go back to kerosene lighting and gasoline and kerosene for summer cooking.

W. J. MADDOCK, State Representative, Plaza, N. D.

First consider this wonderful thing about acetylene—the reason for its great economy—it is over ten times richer than city gas. A hundred feet of acetylene gas gives more light than a thousand feet of city gas.

The burners of an acetylene system have smaller openings than the burners used with city gas, so that you not only get a much better and brighter light than it is possible to get with city gas but you also get the full benefit of the unusual richness of acetylene gas from a money-saving standpoint.

A city gas burner producing 15 to 20 candle-power light burns 4 to 5 cubic feet of city gas per hour.

An acetylene burner producing 25 candle-power light, burns only one-half of a cubic foot of acetylene gas per hour.

Note that with acetylene, you get **stronger light** with only **one-eighth to one-tenth as much gas**. Good carbide costs 5 cents per pound.

A pound of carbide produces 4½ to 5 cubic feet of acetylene gas. (Remember that this is equal to 45 to 50 cubic feet of city gas). Thus a 25-candle-power acetylene light will burn 9 to 10 hours on 5 cents worth of carbide, or a cost of a half-cent per hour.

How Much Will It Cost You Per Month?

That, of course, will depend on how many lights you have installed and how much you use them. Some people use more light than others, stay up later, or use more lights at one time. Then, if you use a gas stove or iron, you will burn more gas.

But to give you a general idea, here are six reports from owners of “Northern Light” Systems that fairly represent the different conditions among the hundreds of reports we have on file.

“Am still running on a charge of 100 pounds put in 5 months ago and have used all the gas needed by the family. We have 9 lights in the house, 2 in the barn and 1 in the yard.” L. F. Anderson, Olivia, Minn.

“I have 19 lights in the house and they are used any and every time light is needed. I use only 400 pounds of carbide per year.” Simeon Nickels, Bloom City, Wis.

“It costs us about \$14 per year for 26 lights.” G. V. Cotherman, Granada, Minn.

“We have 22 lights in 2 houses. We use about 400 pounds of carbide per year.” Mrs. C. G. Pisel, Humboldt, Iowa.

“I have had it installed for 4 years. I have 20 lights and we use the gas for cooking. We use about 300 pounds of carbide a year.” Peter Yust, Medford, Minn.

“I have 30 lights in my house, barn and auto shed. I use 200 pounds of carbide a year and use all the lights I have use for.” A. J. Boddicker, Watkins, Iowa.

By averaging up all these reports, we find that the average cost was

Have never heard of any trouble with “Northern Light” plants.

C. L. THURBER, Chatfield, Minn.,
Secretary Security Mutual Fire Insurance Co.

5 cents per light per month. Thus 20 lights cost them on the average of \$1 per month. Understand that this is the average for the whole year. In winter you'll use more light, of course, than in summer. Stoves use more gas than lights.

We make two standard size plates for "Northern Light" acetylene gas stoves—one burns 3 cubic feet of gas per hour; the other 4 cubic feet per hour. You see this is 6 to 8 times as much as used by a 25 candle-power light burner.

Of one thing you may be sure,—that a "Northern Light" Pit Generator Acetylene Lighting System, will give you better, safe and more convenient light than any other home lighting system at no greater cost, but in all probability at a much smaller cost.

The Safety of Acetylene Light

Professor Pond says that "enough gas could not escape from a wide open burner during the night in an ordinary room, caulked up tight, to cause even a headache. However, should there be the least escape of gas, it would be immediately known by the irritating odor, sufficiently penetrating to awaken a sound sleeper, making assurance doubly sure."

He also states: "Acetylene can never escape without revealing its presence by reason of its penetrating odor. The effects are instant and annoying, favoring the probability of the acetylene leak being discovered." (Other gases have a soothing, sleep-producing effect.)

"Asphyxiation, in the sense in which we know it, as resulting from the respiration of coal gas, is entirely unknown to the character of acetylene."—Professor Pond.

It requires ten times as much coal or water gas to produce the same candle power as acetylene gas. In other words, in the use of acetylene gas the average burner consumes one-half cubic foot per hour to five or six cubic feet per hour of other gas to produce the same light. Any one in a room into which acetylene gas was escaping would therefore have ten to twelve times longer a period to wait for any effect from acetylene gas.



We also have the gas iron attachment which has made ironing in the country a pleasure rather than drudgery.

JOHN BRUECK.

There is not a case of asphyxiation known from acetylene gas, nor any injury recorded from inhaling acetylene gas, because it is absolutely free from any poisonous ingredient.

"Is there not great satisfaction in the knowledge that leaving a jet open in the living room for a week involves no peril to human life?" asks Professor Pond.

The chance of explosion has been absolutely eliminated in the improved model "Northern Light" Pit Generator. It's perfect carbide feed automatically regulates the amount of gas generated, so that there is never more than $2\frac{3}{4}$ oz. pressure per square inch in the system. The new refilling device enables you to refill generator with carbide and water, and pump out sludge, without letting in any air and when there is no air mixed with acetylene gas, it cannot be ignited—it has no power or force. These and other safety features of the "Northern Light" System are fully explained on following pages.

"Northern Light" Approved by Underwriters

It is well known that the best corps of engineers and experts are employed at the Underwriters' Laboratories of Chicago. After rigid tests and careful experiments, they have passed our "Northern Light" Pit Generator as a safe device. Insurance companies always advise outside generators when installing gas machines. Your rates of insurance are lessened rather than raised by installing one of our "Northern Light" Pit Generators. The listing of our system by the National Board of Insurance speaks volumes for its safety.

We have letters from officials of ten different fire insurance companies, in which they approve the "Northern Light" System. Here are extracts from some of these letters.

"Our records show that we have never had a loss directly or indirectly caused by your system. We have no hesitancy in writing risks so lighted, in fact, we consider them preferred risks over those lighted by other systems."—Implement Dealers Mutual Fire Insurance Co., of North Dakota.

"We would prefer to write buildings equipped with this system than to have them use old style lanterns and lamps." Security Mutual Fire Insurance Co.

"An investigation of this lighting system by the writer has convinced us that it is one of the safest lighting systems offered for sale by any company in America."—Minnesota Implement Mutual Fire Insurance Co.

I will put it up against any light and I'll just bet that the Clefton Company has them all beat.

GEORGE B. WELZEL, Postville, Iowa.

Features of the "Northern Light" — Safest of Home Lighting Systems

"Simplicity itself" is what you will say after looking over the cut-away view of the "Northern Light" Generator as shown on the two center pages of this book.

We have made it so simple and perfect in design and construction that everything about it is absolutely automatic, except replenishing the carbide and water from three to six times a year (depending on how much gas you use for lighting and cooking).

We have even made the operation of cleaning out the sludge a safe, clean, pleasant job.

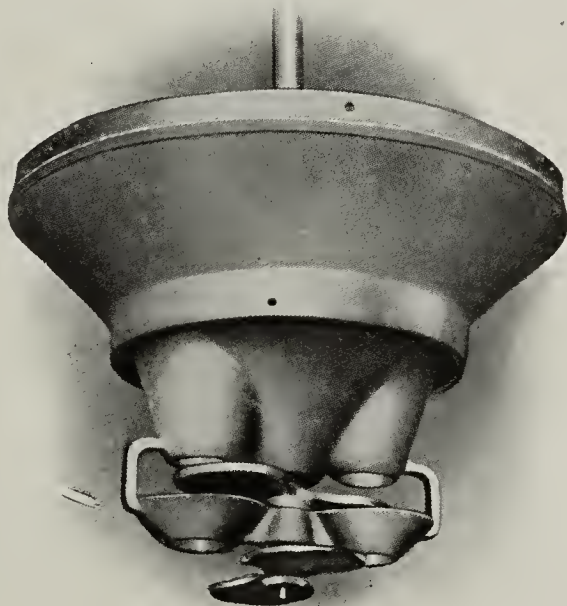
Our trained expert takes all the worries of installation off your shoulders. When he leaves, you may be sure that all it is necessary for you to do is to turn lights on and off for the next two to four months, after which time it may be necessary for you to replenish the supply of carbide.

Perfect Automatic Carbide Feed

In this exclusive "Northern Light" feature you get one of the biggest advantages over any and all other acetylene lighting systems—you get a **feature that makes assurance doubly sure**, that affords you the greatest safety and security.

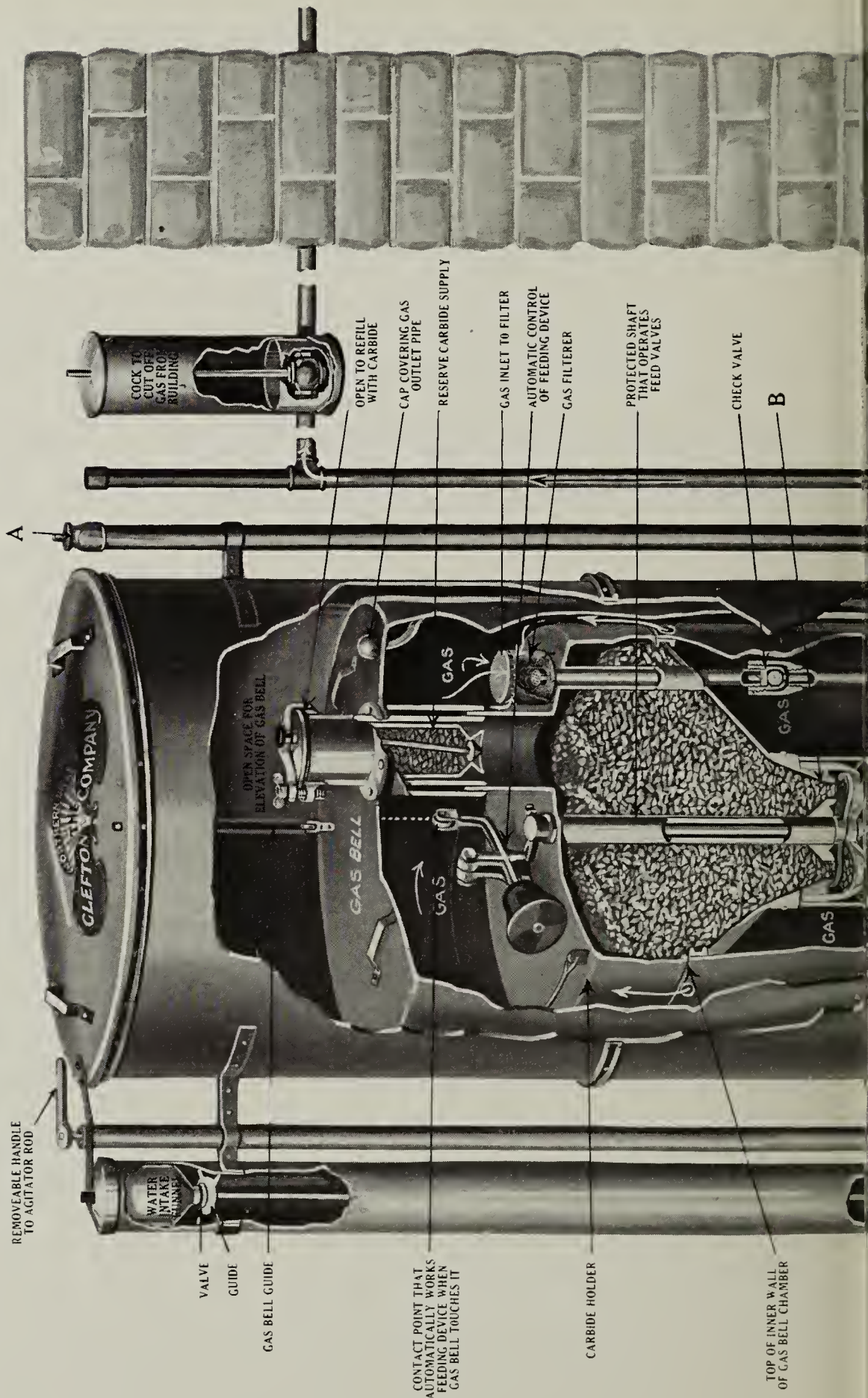
Study carefully the diagram in the center of this book and the illustration on this page and you will see how this automatic feed works. Note the measuring cups under the carbide holder with feed valves between them and the opening in the bottom of the carbide holder, and the other feed valves under the measuring cup.

As the supply of gas in the gas-bell is slowly exhausted, the gas-bell lowers gradually. Now, note that the automatic feeding device is connected by a shaft with the double feeding valves. As the gas-bell lowers, it touches the contact point which trips the automatic feeding device and this in turn operates the double feeding valves under the carbide holder. These feeding valves open, depositing only a sufficient supply of carbide re-



It was cheaper than any plant I know of.

W. G. WOOD, Granada, Minn.



REMOVEABLE HANDLE
TO AGITATOR ROD

WATER
INTAKE
VALVE

VALVE
GUIDE

GAS BELL GUIDE

CONTACT POINT THAT
AUTOMATICALLY WORKS
FEEDING DEVICE WHEN
GAS BELL TOUCHES IT

CARBIDE HOLDER

TOP OF INNER WALL
OF GAS BELL CHAMBER

COCK TO
CUT OFF
GAS FROM
BUILDING

OPEN TO REFILL
WITH CARBIDE

CAP COVERING GAS
OUTLET PIPE

RESERVE CARBIDE SUPPLY

GAS INLET TO FILTER

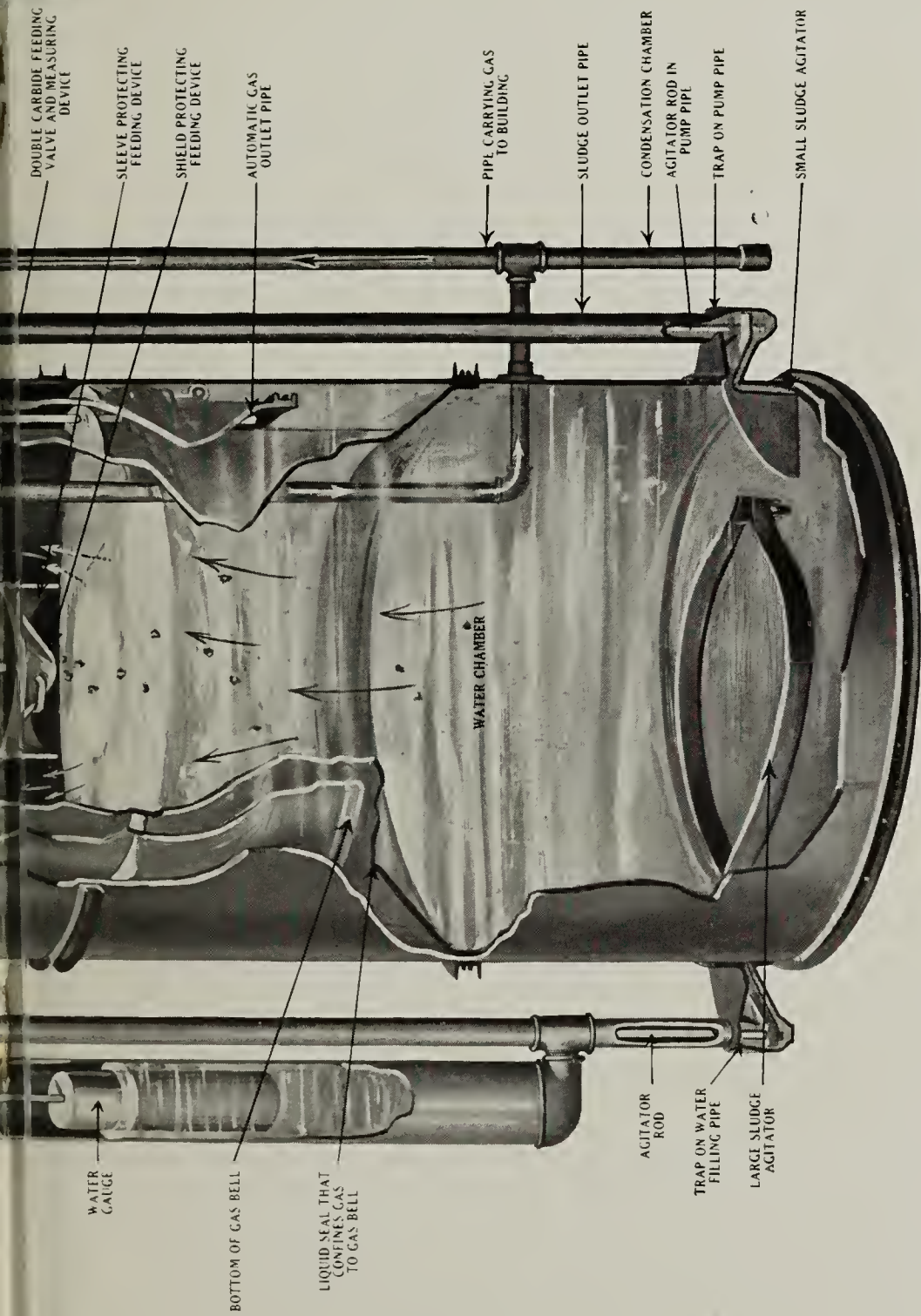
AUTOMATIC CONTROL
OF FEEDING DEVICE

GAS FILTERER

PROTECTED SHAFT
THAT OPERATES
FEED VALVES

CHECK VALVE

B



Cut-out View of Generator Showing all Details of Construction

gardless of whether one or one hundred lights are in use. An over-supply is impossible. This carbide supply is deposited into a large amount of water. As distinguished from the type where the water is dropped on the carbide, Professor Pond says it is "the most rational plan." When the charge is deposited in the water, acetylene gas is formed at once and rising through the water, which washes it as it rises, fills the gas chamber around the carbide holder, passing from there through the holes near the top into the gas-bell.

As the gas-bell is filled, it rises, closing the carbide feeding valves, which do not re-open until sufficient gas has been consumed to allow the gas-bell to lower and trip the automatic feeding device again.

From the bell the gas is taken into the filter, where it is purified and then carried through the supply pipe to the house and furnished to the burners in the form of cool, pure acetylene. Should the slightest particle of moisture still remain in the gas after it has passed through the filter, it is automatically discharged into the condensation chamber.

The whole operation is slow, gradual, automatic and positive. The apparatus is so simple and free from friction in its operation that there is no chance for it to get out of order or fail to operate perfectly.

This perfect feeding device automatically and positively controls the amount of gas in the system at all times so that there is a uniform pressure in the pipes of $2\frac{3}{4}$ ounces.

In the view of the generator referred to, the gas-bell is shown in the position it assumes when filled with gas. Notice particularly the depth to which the bottom of the gas-bell extends into the water. This is a very important feature, as the (kerosene used in cold climates) or water forms a perfect seal, that confines the gas to the gas-bell and absolutely does away with any chance of the gas getting into the outer chamber of the generator.

The outer wall of the generator, the gas-bell, the carbide holder and the inner wall of the gas-bell chamber are all made of "Armco Iron," which is sufficient guarantee of quality and long life.

Reserve Carbide Supply

The reserve carbide supply chamber is plainly shown in the picture of the generator on the two center pages. When the supply of carbide in the main chamber is exhausted, which is as likely to happen at night as at any other time, a sufficient amount of gas may be supplied to last for several hours, by simply pulling up the plunger valve, which is plainly seen in the picture, thus releasing this reserve supply of carbide.

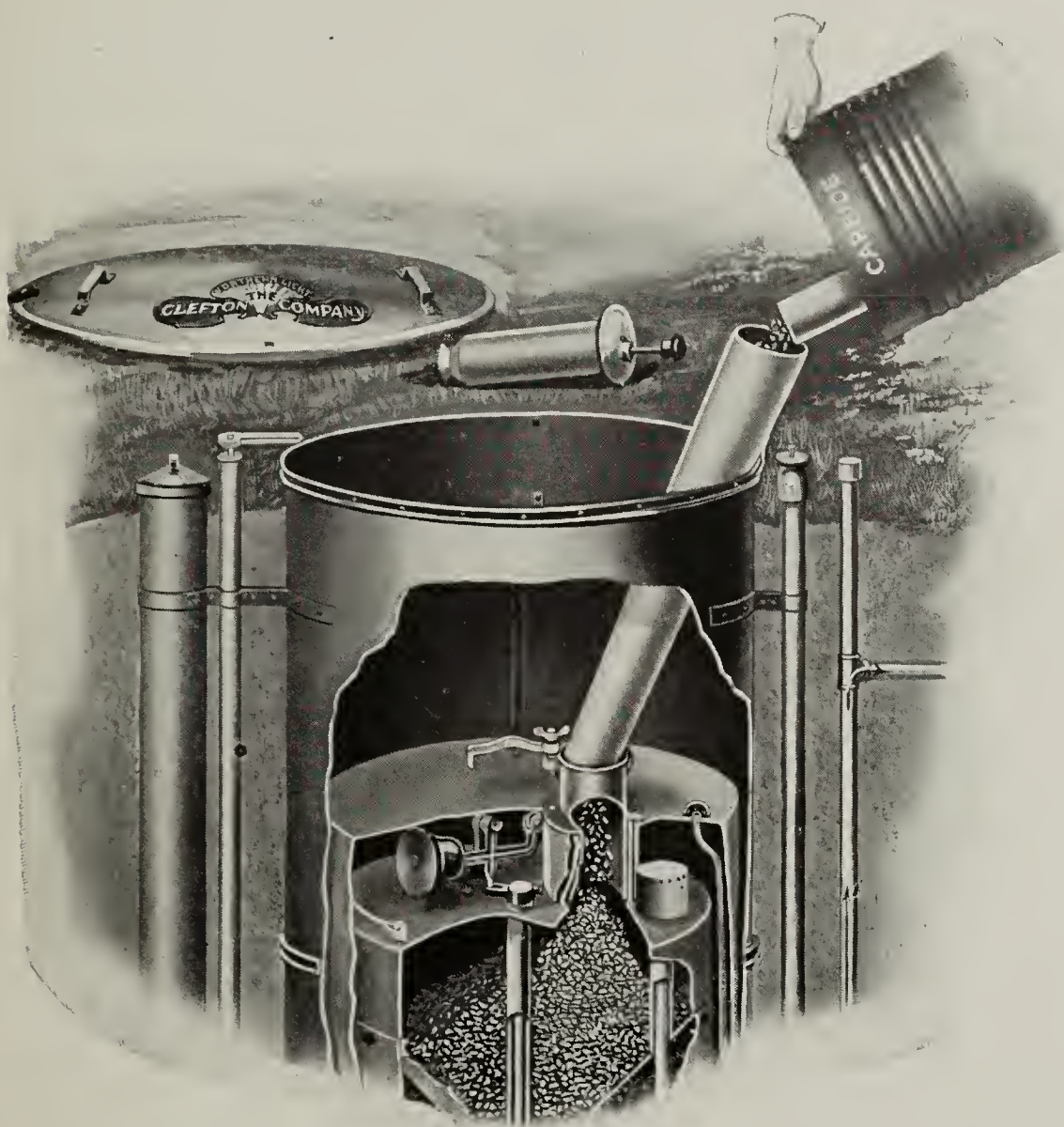
When this is necessary, you must be sure to refill the generator and reserve chamber with carbide on the following day. This is also the proper time to pump out the sludge and refill the generator with fresh water.

Never had any trouble with it and have had the plant for three or four years.
MRS. IDA RADDATZ, Clements, Minn. R. F. D. No. 1.

Absolutely Safe Refilling Device

This new patented feature, which can be had only with the "Northern Light" Acetylene Lighting System, is the most revolutionizing development in the acetylene lighting industry for many years.

To understand the importance of this invention, it is only necessary for you to know that pure acetylene gas, without air mixed in, cannot ignite and has no power or force. Any chemist will tell you that.



Think it much easier to take care of than an electric plant.

JOHN GEFFE, Whitehall, Wis.

Therefore the reason that this new refilling device makes the "Northern Light" system so safe is because it enables you to refill the generator with carbide, pump out the "sludge" (which we explain further on) and pour in fresh water **without letting any air into the generator.**

Moreover, it makes the entire operation of recharging the generator a simple, easy, clean job, taking less than an hour at the most, usually less than a half hour after you've done it once or twice. (And remember that this is the only attention required to operate the "Northern Light" system and that you only have to do it a few times a year.)

Putting in the Carbide

This feature saves you money, too, as it avoids waste of gas and carbide—increases the efficiency of each can of carbide from 5 per cent to 10 per cent and saves the annoyance of having to burn lights that are lessened in brightness by the air mixture for several hours after recharging. The illustration on page 15 shows what a simple job it is to refill the generator with carbide. First close the cock at the generator, cutting off the supply of gas to the buildings, then remove the top cover of the generator, take out the reserve supply chamber, insert the spout, which is a part of our equipment, and pour in the carbide.

Notice that it is not necessary to remove the carbide holder or gas-bell. You will note also that our construction leaves no possibility of even a single grain of carbide getting anywhere except into the carbide holder. If any carbide is spilled, it must fall outside the carbide holder and gas-bell where it can do no harm. This relieves you of the responsibility that is connected with the operation of many so-called acetylene generators.

When generator is filled the first time, after just being installed, the next thing to do after filling the holder with carbide is to pour in the water thru the water intake funnel, as shown in illustration on page 18.

Only the required amount of water can be put in, for the reason that the water gauge, which you can clearly see in the illustration in the center of the book, automatically closes the valve at the bottom of the water intake funnel, when the water has reached the proper level in the generator. This is another feature that relieves you of any guessing of just what to do in operating the "Northern Light" System.

The generator then starts to work making gas, which forces the air out of the gas-bell and pipes leading to the lighting fixtures when the burners are open. After the lights are used a little while, say long enough to use a few pounds of the first filling of carbide, the air is completely expelled and there is nothing in the gas-bell and pipes but pure acetylene gas. (This first filling is done by the Clef-ton Co., mechanics who install

I must say it is a dandy. Have had it two years and have only used four hundred pounds of carbide and am using ten lights.

A. K. JOHNSON, Milton, N. D.

the plant, and who will also explain the operation of the “Northern Light” System to you).

The generator is **FREE** from all air forever thereafter, unless the machine be opened up for some purpose and in that event the same process of air expulsion would be complete after burning a few pounds of the first charge of carbide. Gas engineers have long studied the problem of an air-free gas-bell and our engineers have produced it.

Exhaustive scientific tests of the “Northern Light” acetylene generator have proven it to be absolutely air-tight in construction and positively air-free after the air has been expelled as explained above. In these tests, the acetylene gas-bell could not be ignited by hot sparks from a battery of 13 dry cells and 2 spark coils. We shall be glad to send you a complete report of these official tests, which were witnessed by many prominent citizens, and which, as one of them expressed it, “established beyond question the fact that acetylene gas when properly handled, as it is in the “Northern Light” System, is just as safe as any other lighting method, while it is infinitely more to be desired as a lighting and cooking gas than any other.”

Cleaning Out the Sludge

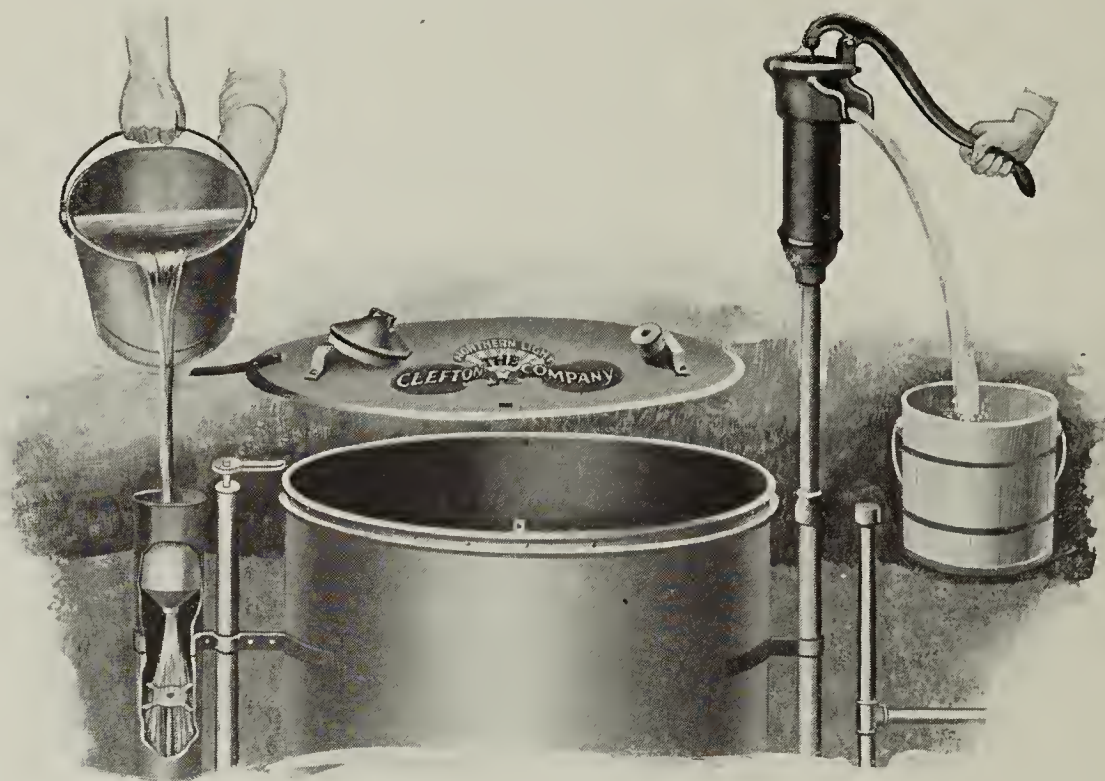
When the carbide comes in contact with the water, it forms acetylene gas and when this gas is released, the solid parts of the carbide which we call “sludge,” (but which is really only slacked lime), is deposited in the bottom of the generator.

Instead of being a disagreeable mess that is hard to dispose of, this sludge, (“slacked lime”) is highly valued for several purposes. It can be used as a fertilizer, to sweeten land or as a whitewash to sweeten cellars and rooms that have become musty, and to paint fences, chicken houses, etc.

We have made the removal of this sludge from the “Northern Light” generator an easy, clean, safe job. First, attach the removable handle that comes with the outfit to rod (A) (See large diagram illustration in center of book) and work the rod back and forth a few times. This operates the small sludge agitator shown in the diagram illustration. Then attach to agitator rod on the opposite side of generator which operates the large sludge agitator. These agitators stir up the deposits of sludge in bottom of generator and mix it with the water. Then you attach the pump (which comes with the outfit) to sludge outlet pipe (A) and pump out the water and sludge as shown in illustration on page 18. Pumping the water out of the water chamber acts in connection with the feeding device the same as drawing gas thru the burners. Car-

Would not be without it for three times its cost.

REV. JAMES MULLIGAN, Dubuque, Iowa,
Pastor of Catholic Church, Key West.



bide will be deposited in the remaining water and will make gas which will fill the place vacated by the water pumped out.

Gas-Bell Seal. The kerosene or water in gas-bell chamber acts as the seal which prevents any air getting into the gas-bell. The bottom of the generator is so built that only a certain amount of water can be pumped out, so that there is always enough water remaining to make a perfect air-tight seal.

The sludge can't spill into the water chamber where the gas-bell works, because of our improved method of removing the sludge with a pump. The gas-bell always operates in kerosene or clean water, which is free from sludge, and not in the water in which the carbide is deposited. This kerosene or clean water insures free action of the gas-bell at all times. This is another long step forward.

Automatic Gas Outlet Pipe. After the sludge-filled water is pumped out, you pour in the fresh water. Right here is where one of the features of our new method of refilling the generator comes into play. On the right hand side of the diagram illustration in center of book you will find the "automatic gas outlet pipe" indicated (about third way up from bottom of generator). On the top of gas-bell, near right hand edge, you will see the cap covering gas outlet pipe.

As you pour water in the intake funnel, the gas bell will rise to a

Your "Northern Light" pit generator is a perfect machine.

MARTIN KENNA, R. No. 2, Dubuque, Iowa.

point where the surplus gas in it will automatically escape through the gas outlet pipe into the open air. No personal attention is required—the arrangement is entirely automatic. Gas will escape from this pipe and from under the cap only while water is being replaced in the water chamber. As soon as the correct amount of water has been placed in the generator, the gas bell will resume its normal position which in turn will automatically seal the automatic gas outlet pipe and it will remain so until the operation is repeated.

This small amount of gas that is forced out when you pour in the fresh water is simply the surplus generated to fill the space created in the lower water chamber when you pump out the old sludge-laden water. As it is so small in amount and as it escapes out into the open air, it is absolutely harmless. The important advantage gained by this feature is that it does away with the necessity of letting air into the generator, so that there is never a **confined** mixture of air and gas.

Compare this “Northern Light” System with the many forms of gasoline-gas, coal-gas, and other gas systems which depend for their operation upon a mixture of air and gas **confined** in a container. Consider that the “Northern Light” System confines only an absolutely pure acetylene gas, which cannot ignite and has no power force, and which secures the necessary mixture of oxygen to make it burn only when it comes out of the burner tip—and you will understand why fire insurance company officials and other authorities have stamped the “Northern Light” System with their approval as the safest artificial lighting system in the world.

All “Northern Light” Systems Installed by Factory Experts

Every “Northern Light” installation is made by our own trained men—who are sent right from our factory to your place—men who have nothing else but this kind of work and know how to do it right. They can and do install “Northern Light” Systems in the finest homes without doing the slightest damage to walls, woodwork, floors, or furniture and without making a lot of muss and litter.

Yet the piping is all concealed in the walls or between the floors and ceilings. “The installing was certainly a surprise to me” writes Mr. G. C. Goodspeed, Waseca, Minn., “the way he stuck pipes all over the house and left no trail behind him was a revelation to yours truly”. “Your Mr. Nelson did an excellent piece of work in my house and twice as quick as I expected,” reports Mr. E. V. Wright, South Wales, N. Y. We have many more letters praising the skill, conduct, courtesy and quality of work of our installation experts.

It is not nearly as expensive as the electric light of my friends in the city.
MICHAEL GAMBLE, Mankato, Minn. R. R. No. 6.

Every joint is put together with threads and malleable iron fittings, white-leaded and screwed together tightly, just the same as in high class plumbing work. This pipe continues on to the fixtures and extends down through the center to the arm of the fixture, which is made of very heavy material. There is no possible chance for a leak once installed by our mechanic.

Every Installation Carefully Inspected. After the piping is all completely installed, caps are put on the ends of the pipes and a heavy air pressure is placed upon the piping. The air pressure pump used for this test has a gauge which registers the number of pounds of air pressure. You are invited to watch this test, and if the gauge should vary a particle in 30 minutes, our mechanic will go over every joint from the generator to the last piece of pipe in the house and locate any leaks if there happens to be any.

The installation will take only a few days and will not cause you the slightest inconvenience. Our men are under bond and you will take no risk in letting them into your home. They will not leave your premises until **you are satisfied** with the installation and know that you are going to get satisfactory service with your "Northern Light" System. They will carefully explain its operation to you, and make the first filling of the generator, leaving everything all ready for you to turn on the lights.

Next to the perfection of the generator itself, the skill and care used in the installation of the "Northern Light" Acetylene Lighting System is the thing that has contributed most of its success and safety. Our responsibility does not cease even there, as our guaranty obligates us to see that nothing goes wrong with your generator for the next five years. (See last page.)

The fact that "Northern Light" Systems are installed in State Universities, county, state and government institutions, schools, hospitals, churches, factories, stores, summer resorts, opera houses, etc., as well as in private homes, is positive proof of the confidence of the officials and owners of such institutions in the safety and perfection of this system.

I want to tell you how I like your light plant. I am more than pleased and would not think of parting with it for twice the cost. It's worth its weight in gold. It would be a punishment for me now to have to go back to the old greasy, smoky, dirty lamps again after using your lights, as bright as day with no dirt to clean, and always ready to light with a single twist of the wrist. I truthfully can say your "Northern Light" System is a God-sent blessing and may you prove successful in selling it to the world.

MRS. A. L. MORRIS, Woonsocket, S. D.

Installed in Schools, Churches, Halls, Stores, Theatres, Etc.

Our "Northern Light" System is playing a very important and growing part in the development of community life in the country and small towns. In churches, schools, club houses, halls and stores, the beautiful glow of acetylene is attracting folks to church services, social gatherings, instructive meetings, and in a very effective way helping the "get-together" spirit of modern times in rural communities.

The Best Cooking Fuel for Domestic Science Classes

The convenience and the value of acetylene gas stoves in church kitchens, in Farmers Club kitchens and in the Domestic Science classes of the schools, have been thoroughly proven by the enthusiasm of the many such institutions for whom we have installed satisfactory systems. State Universities in their extension work in Domestic Science and Agricultural School laboratories are almost daily recognizing the superiority of acetylene gas for these departments as compared with any other means of cooking.

The University of Minnesota had an examination of our system made by Pillsbury & Company, of Minneapolis, the consulting engineers for all state contracts, and were so satisfied with their report and approval that they purchased two systems for use in their Extension Domestic Science Departments and Agricultural School Laboratories.

Mr. H. C. Poehler, Superintendent of Le Sueur Center (Minn.) Public Schools writes: "In reply to your request as to whether our "Northern Light" acetylene system is successful or not, I will say that it is. The Domestic Science teachers like the plant. It is very clean, acts quickly, does not clog, requires no cleaning and is economical. We have 12 Bunsen burners in the Chemistry Laboratory and 10 hot plates in the Domestic Science Department. We use on an average of about 70 pounds of carbide a month."

Superintendent B. B. Bassett of the Humbolt (Iowa) Public Schools writes: "Three years ago you installed a gas plant for our Domestic Science Department and it has been very satisfactory. We find that it is inexpensive as compared with other kinds of fuel and meets our needs in every particular."

Mr. R. J. Bradley, Superintendent of the Independent School District of Armstrong Grove, Armstrong, Iowa, writes: "We are using

Consider it a very great improvement over any other system that we have investigated.

G. V. COTHERMAN, Granada, Minn.

your "Northern Light" Generator for Domestic Science and Science Laboratory purposes. We have averaged about two cooking classes a day there being 18 in one class and 8 in the other. The larger class has done more cooking than the average domestic science class would do for it has cooked every day and has had charge of the preparation of the food for our school cafeteria; which has fed on the average about 30 people every noon. Our cooking classes have 80 minute periods, but of course are not using the stoves all the time. We have a party or taffy pull at the school building at least once a month and all cooking has been done in the domestic science room. Our average use of Carbide is about 200 pounds per School Month.

The Company Behind the "Northern Light" System

has made a life study of lighting systems for country homes and has had many years' experience in the manufacture of acetylene lighting plants.

About eight years ago the Clef-ton Company put on the market the first successful open pit type of acetylene generator. This was the first big step forward in acetylene lighting systems, because it took the generator out of the basement of the house, where it was a nuisance to say the least, and put it outside in the ground where it was out of the way and safe.

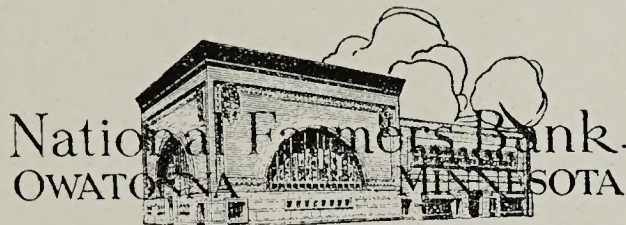
For eight years we have worked unceasingly to perfect this pit generator to a point where it would stand the severest tests, the most minute scrutiny and the keenest competition.

The test of time and service in thousands of homes, plus scientific tests made by the Clef-ton Company engineers and the investigations by fire insurance company officials have proven the present model "Northern Light" Generator described in this book to be the most complete, most convenient, best designed, best constructed home lighting machine on the market today—and that it is installed and operated with the least work, the least trouble and the least annoyance.

An investigation has convinced us that it is one of the safest lighting systems offered for sale by any company in America. C. I. BUXTON, Secretary Minnesota Implement Mutual Fire Insurance Co., Owatonna, Minn.

The Responsibility of the Clefton Company

is shown by this reproduction of a letter from the biggest bank in Owatonna, Minnesota. If you wish, we will be glad to have you investigate our standing even further.



J U L Y 18th, 1917.

To The Public:

It gives us great pleasure to write concerning the excellent financial condition and splendid personal qualities of the officers and directors of the Clefton Company of Owatonna.

The Clefton Company have been doing business with us for a great many years and we thus have had an opportunity to know intimately concerning their financial progress and their methods of doing business and of treating their customers.

Therefore it is that we can say without qualification that the Company is amply responsible financially and that the officers and directors are men of the highest integrity and standing and that all customers are treated honestly and fairly.

It is also within our personal knowledge that the Northern Light Acetylene Lighting System is free from any objectionable features and is absolutely the best.

Very truly,

President.

CKB-R

Farm electric plants will have to undergo much improvement before being much of a competitor with this lighting system.

W. J. MADDOCK, N. D. State Representative, Plaza, N. D.

Here is the Guaranty Behind the "Northern Light" System

No. _____

GUARANTY

We, the undersigned, hereby guarantee that the Northern Light Pit Carbide Generator bearing the above number, as installed, is perfect in material and workmanship and that same will give satisfaction, if kept recharged according to instructions. The piping is guaranteed to be free from gas leaks according to Test Report. Any part of the Generator which proves defective within five years, will be replaced free, if returned to our factory at Owatonna, Minn.

THE CLEFTON COMPANY

[Signature]
President

Countersigned _____

WHO INSTALLED THIS SYSTEM

Not Valid Until Countersigned.

Read this guaranty carefully. Every word is full of importance to you. It backs up every statement made in this book. A responsible company could not afford to put so broad a guaranty behind any but a thoroughly reliable article.

I have used lard, oil, kerosene, gasoline, electric, but I find the carbide by far the best and the least trouble of any. It requires only about one-half hour of time every six or seven weeks to recharge the generator.

M. W. BAKER, Walnut Grove, Minn.

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